ABSTRACT

An economical structural cellular lightweight concrete with a density of from about 45 lb/ft^3 to about 90 lb/ft^3 and a strength from about 1,000 psi to about 6,000 psi after 28 days of curing at room temperature and with minimal shrinkage on drying, is described. The concrete comprises cement, lightweight aggregate with a density from about 25 lb/ft^3 to about 60 lb/ft^3, fiber, superplastizer, gas and/or foaming agents, and a shrinkage reducing agent. The concrete can be manufactured using facilities for conventional concrete even with a portion of Portland cement replaced by industrial by-products or recycled materials such as blast furnace slag, coal fly ash and recycled glasses. The preferred procedure for making the lightweight concrete is also described. The products made with the lightweight concrete have much better ductility and construction capabilities than conventional concrete products.